

### III. REMARKS

In the Office Action, objections were made to claims 1-4, 6-9, and 11-13 for reasons set forth in the Action. These claims are amended to overcome the objections.

Claims 1-12 and 14-20 were rejected under 35 U.S.C. 103 as being unpatentable over Applicant's specification (pages 1-4) in view of Marsan (US 6,564,068) and Chuah (US 6,400,695), and claim 13 was rejected under 35 U.S.C. 103 as being unpatentable over Applicant's specification in view of Marsan, Chuah, and Blatherwick (US 6,269,395) for reasons set forth in the Office Action.

The following argument is presented to overcome the rejections under 35 U.S.C. 103, and to show the presence of allowable subject matter in the claims.

The subject matter of present claim 1 relates to a method for accelerating a set-up procedure for wireless connections between at least two devices. A method according to the prior art is discussed in the present specification on pages 1-4, wherein the specification notes a disadvantage in terms of an elongated set-up time of the prior-art method, which elongated set-up time is established to avoid collisions in responses from devices that are responding to an inquiry. The present invention, as set forth in claim 1 attains the desired objective of a reduce set-up time, in accordance with the features of the present invention, wherein:

A A set-up procedure requires a first device to receive an inquiry message initiating the procedure from a second

device twice with a back-off time in between before responding to the second device.

B The first device scans for inquiry messages.

C The first device measures a value of a parameter associated to a detected inquiry message indicative of the received power level of said detected inquiry message.

D The first device determines at least a maximum number as a function of the measured value.

E The first device generates a random number within a number space limited by the determined maximum number.

F The first device scans again for said detected inquiry message after a back-off time, the length of which back-off time is related to the generated random number.

It is an object of the invention to reduce the time required for an inquiry procedure between two or more devices that wish to establish a wireless connection.  
(present specification, page 5, 2nd paragraph)

By reducing the maximum allowed random number in an adaptive way (foregoing steps C, D) instead of to a generally applicable fixed value, the average time required for establishing a connection can be decreased, while avoiding at the same time an increase in collisions between simultaneous responses or an increase in collisions during a scanning for respective second inquiry messages. (present specification, page 6, 3rd paragraph)

The foregoing observations apply also to present claim 14 that is directed to a corresponding device and to present claim 17 that is directed to a corresponding communications system.

In the rejections of the claims, the examiner refers to four documents for supporting his opinion that the subject matter of all claims is obvious to a skilled person. These documents are described:

A description of the Bluetooth<sup>TM</sup> system is presented in the present specification. The examiner refers to the description provided in the present specification.

The Marsan patent relates to providing a communication service to a communication unit in a wireless communication system with overlapping coverage areas (see Title). A base site 109 receives a service request for a service from a communication unit 112 (Fig. 1). If a communication resource of the required type is available at the base site 109, the requested service can be provided to the communication unit 112 by the base site 109 (col. 3, lines 34-50).

When a communication resource of the required type is not available at the base site 109, the communication infrastructure equipment selects an alternate base site from overlapping base sites 106-108 that is capable of providing the service and has an acceptable signal quality - determined by performing SQE measurements - at the communication unit 112 (col. 3, line 51-col. 4, line 2).

The communication infrastructure equipment receives a list of base sites having an acceptable service quality, ordered first according to a base site priority associated with each of the listed base sites and second according to signal strength measurements of signaling from each of the listed base sites. The base sites are given a base site priority to establish some base sites as more attractive alternate base sites than others. The signal strength measurements preferably comprise received signal strength indication (RSSI) measurements (col. 4, lines 3-19).

The communication unit makes the SQE and RSSI measurements and compiles the list (col. 4, lines 20-23). The infrastructure equipment searches the list of base sites in order, beginning with the first base site (col. 4, lines 31-34).

The Chuah patent relates to providing access priority control in a media access control protocol of a Universal Mobile Telecommunications System (col. 1, lines 21-27). A terminal has packets to be transmitted uplink to a UMTS base station. In an RBBAP (random back-off based access priority) approach illustrated in Figure 6, each priority class is assigned a different average back-off delay. Requests associated with a higher access priority will have a smaller average back-off delay. Whenever there is a collision, or for other reason, an access request is not successfully received at the base station, the terminal chooses a random delay distributed in a range for the appropriate priority class (col. 10, lines 5-21). It is also indicated that a terminal set as class 0 has a higher

priority than a terminal set at class 1 (col. 10, lines 36-37).

The terminal determines whether a new access request is required and transmits an access request (col. 10, lines 38-44). If an access request is not successful, the terminal may perform a back-off process. It selects a random back-off delay from a given back-off delay distribution. If the priority of the transmission is high, the terminal selects from the lowest random back-off delay distribution thereby increasing the likelihood of a successful request. That is, the back-off delay is relatively short such that re-transmission is relatively sooner than for lower classes (col. 10, lines 53-66).

The Blatherwick patent relates to a computer based system for providing access to services associated with different access points (see Title). A device with a display is described, which may list previously saved access points (col. 13, lines 43-52). This reference is cited only for dependent claim 13.

In the rejection of claim 1, the examiner is of the opinion that the teachings of claim 1 are obvious when proceeding from the Bluetooth<sup>TM</sup> specification and considering in addition the Marsan reference and the Chuah reference.

The invention proceeds from the Bluetooth specification, which defines a set-up procedure for wireless connections between at least two devices. It requires a device to receive an inquiry message initiating a procedure from another device twice with a back-off time in between before

responding to the other device. In order to reduce the number of collisions, the back-off time is selected randomly up to a predetermined maximum number.

The Bluetooth specification does not teach one to adapt the range from which the back-off time is selected based on measurements relating to the power level of an inquiry message, and therefore does not teach the above-noted features C, D of claim 1.

The Chuah reference, mentions a back-off delay, which is selected randomly from a range. The maximum number of this range depends on a priority class of a request or of a terminal.

The Marsan reference suggests that RSSI measurements may determine the priority in which one device (base site) is selected for a connection to another device (terminal).

The examiner considers features C, D of claim 1 to be disclosed by a combined consideration of the Chuah reference and the Marsan reference, that is, when using the RSSI measurements from the Marsan reference as priority information in the approach of the Chuah reference.

However, a person skilled in the art would not have combined the three documents as assumed, by the examiner, for the following reasons:

- 1) The Bluetooth<sup>TM</sup> specification relates specifically to Bluetooth<sup>TM</sup> connections, the Marsan reference to a network, in which several base sites with overlapping coverage areas

are managed by a communication infrastructure equipment, and the Chuah reference relates to UMTS. A person is either skilled in the field of Bluetooth or in the field of cellular networks, but not in both. Therefore, a person proceeding from the Bluetooth specification and trying to improve a problem specific to the establishment of Bluetooth connections (here: reducing the time required for an inquiry procedure between two or more devices that wish to establish a wireless connection) is a person skilled in the field of Bluetooth. Such a skilled person would not consider documents relating to completely different systems, like cellular systems, for solving the problem, as the technical requirements are quite different. At the most, he would consider other technologies known for ad-hoc network.

2) The Marsan reference does not deal at all with the problem of collisions, which is the reason for the repeated scanning of inquiry messages in claim 1. Also for this reason, it would not be considered by a skilled person. Further, in the Marsan reference, the network evaluates RSSI measurements performed by another device (i.e. a terminal) in order to determine its further action (namely select a base station and provide a service via the selected base station). According to claim 1, a first device performs measurements, and the same device decides based on these measurements on a further action (namely, a determination of a random number and a new scanning). When considering for some reason the Marsan document, a skilled person would thus come at the most to the idea that a device transmitting inquiry messages (claim 1: second device) receives measurement results on these inquiry

messages from other devices (claim 1: first device) and to select one of these other devices (claim 1: first device) based on the received measurement results.

3) In the Chuah reference, the indicated back-off delay is not comparable to the back-off time of claim 1. In the Chuah reference, the action after a back-off delay is a re-transmission of a request, not a repeated scanning for an incoming request. Further, there is not automatic action after a back-off delay. Rather, a re-transmission is only carried out in case a first request was not successful. That is, collisions are not avoided but dealt with by means of a re-transmission. Simply because the term "back-off delay" is used, there is no reason that a skilled person would consider this document. Further, the considered priority is indicated in the Chuah reference to depend on a classification of a request or of a terminal. Thus, a skilled person receives no hint that the priority could be based on measurement results. When considering the Marsan reference and the Chuah reference, a skilled person would thus, at the most, compare the explicit reference to a priority, namely the "priority to establish some base sites as more attractive alternate", in the Marsan reference to the priority used in the Chuah reference for determining the range for the back-off delay.

On the whole, it becomes apparent that there would have been too many obstacles in combining the features of the three documents for reaching the method of claim 1.

Claims 14 and 17 (the independent device claim and the independent system claim) comprise features corresponding



to the features of the method of claim 1. Thus, the same comments apply as for claim 1.

With respect to the dependent claims, the examiner considers also the subject matter of all dependent claims to have been obvious to a skilled person. The dependent claims have to be considered to have been non-obvious already due to their reference to a respective non-obvious independent claim. Nevertheless, it is pointed out for some of the dependent claims that they contain non-obvious subject matter by themselves:

The features of claim 5 are not known from the cited references. In this claim, it is requested that the same maximum number is assigned to each RSSI belonging to a group defined by a predetermined range of RSSI values. (Claim 10 provides a corresponding requirement for an evaluated path loss instead of an evaluated RSSI, and also claims 7 and 12 comprise this aspect.)

The examiner refers to the Marsan reference, col. 4, lines 5-15. However, the signal quality indicated here to be compared to a threshold value is based on the SQE measurements, not the RSSI measurements. Base sites providing a signal quality falling short of a threshold are excluded immediately from the list of possible base stations, while the RSSI measurements are evaluated for the order of base stations in the list. Thus, no grouping based on RSSI values is given. The "grouping" based on SQE values (i.e. the exclusion of certain base stations) will hardly be considered to be suited to form a basis for determining ranges in the Chuah reference, because determining ranges

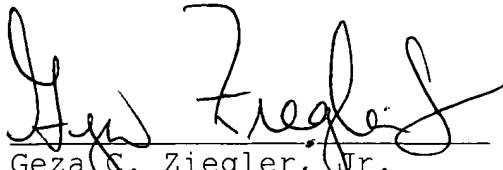
for devices excluded in the first place makes obviously no sense,

It is argued furthermore that the collision avoidance procedure of the Bluetooth™ system is based on the selection of a relatively large back-off time, and that the present invention has found a way of decreasing the back-off time in accordance with received power level of a detected inquiry message. There is no suggestion in the references of the cited art, considered individually or in combination, that one could avoid collisions with a smaller back-off time by relating the back-off time to signal strength. This aspect of the present invention is set forth in the independent claims, and serves to distinguish the invention from the cited art, so as to overcome the foregoing rejections and present allowable subject matter in the claims.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

  
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